Liquidity Risk and Performance of the Banking System

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Abstract

This research identifies and examines the potential causes of liquidity risk in Pakistani banks and evaluates their effect on banks’ profitability. The research displays an empirical relationship between factors of liquidity risk and their effect on the profitability of the banking sector. Data is collected from the income statements, balance sheet and notes of 15 Pakistani banks during 2006-2011. Multiple regressions are applied on data in order to evaluate the impact of liquidity risk on banks’ profitability. The results of multiple regressions show that banks’ profitability is affected by liquidity risk significantly. Non-performing loans and liquidity gap are the two factors which exacerbate the liquidity risk i.e., creating a negative association with bank’s profitability. Only profitability is taken as the degree of performance. Economic factors supporting liquidity risk are not covered in this study. This study addresses the problem of liquidity risk faced by the banking sector in Pakistan. The study helps in understanding certain aspects of liquidity risk and their effect on the profitability of the banking industry. The researchers give emphasis to risk managers to mitigate liquidity risk by having adequate cash assets. This minimizes the liquidity gap thus decreasing the dependence on repo market.

Keywords: Liquidity risk, Pakistani banks, risk management, Non-Performing Loans, bank performance, liquidity gap, cash reserve, risk mitigation

1. Introduction

1.1 Background of the Study

The strength of the banking system is integral to the economic immovability and growth (Diamond & Rajan, 2001). Banks are the principal part of the financial segment in any economy, which perform valued activities on both edges of the statement of affair / balance sheet. On the Liability end, they provide liquidity to account holders i.e., investors, whereas they augment the flow of funds by advancing to the cash-starving customers of funds (Halling & Hayden, 2006).

Financial institutions also facilitate the settlement and payments systems and support the smooth transmission of goods and services. They certify prolific investment of capital to motivate the economic growth. They help in the growth of new businesses, thereby increasing the employment and enabling the development. The diverse nature of functions performed by the banks expose them to “liquidity risk”—the risk that a bank may encounter due to its commitments (Jenkinson, 2008) as the savers may call their funds back at an inappropriate time which cause prompt sale of assets (Diammond & Rajan, 2001), affecting profitability of the bank (Chaplin et al., 2000). Lately, liquidity risk has attracted regulators, researchers and banks following a number of economic and banking crises across the globe. The regulators and banks are now considering the liquidity situation of banks.
Liquidity risk affects the performance and reputation of a bank (Jenkinson, 2008). The bank may lose the confidence of its accountholders if funds are not provided to them well in time. Consequently, the regulator may also impose penalties on the banks. Therefore, it is necessary for banks to manage and keep comprehensive liquidity at every stage to safeguard the risk. Liquidity risk has been a serious cause of anxiety and challenge for banks lately (Comptroller of the Currency, 2001). Extraordinary competition for customer deposits, a wide collection of funding products in corporate and capital markets with technological improvements have changed the finance structure and risk management arrangement (Akhtar, 2007). Even a bank which has upright asset quality, adequate capital and robust earnings may fail if it is not upholding acceptable liquidity (Crowe, 2009).

Banks should be prepared to deal with the fluctuating monetary policy that figures the overall liquidity trends and its own transactional requirements and settlement of short term borrowing (Akhtar, 2007). There are many risks tackled by banks such as market risk, credit risk, interest rate risk and operational risk which may appear in the form of liquidity risk (Brunnermeier & Yogo, 2009).

1.2 Problem Statement and Research Objectives

This research investigates the liquidity risk in Pakistani banks and evaluates the effects on bank's profitability. The main objective of this research is to identify the problems facing the banks during the period 2006-2011 under liquidity risk category.

The study aims to accomplish the following important objectives:

- To what extent deposits boost up the earnings of the bank.
- To what level cash reserves decreases the earnings of the bank.
- To what extent liquidity gap causes a reduction in the bank’s earnings.
- To what extent High provisioning for NPLs will cause a decrease in the bank’s earnings.

1.3 Limitations

Following are the limitations/weaknesses of this research:

- Only focused a few banks of Pakistani banking sector have been focused. Future research can be carried out by taking a larger sample.
- The obtained data is for a short period of 6 years i.e. 2006-2011.
- Economic factors creating liquidity problems have not been taken into account. The future researchers can also take in consideration these factors while studying liquidity risk.
- No comparison has been made between the different types of banks. Future researchers can also undertake comparative study e.g. public and private banks, national and international banks etc.
- The study does not include other measure of performance except earning of bank. Future researchers can also take in consideration the financial as well as non-financial measures of performance.
2. Literature Review

2.1 Pakistani Banking System

Like other South Asian countries, Sri Lanka, Bangladesh and India; Pakistan’s banking industry is also the engine of development, growth and key moneylender to private and public sectors (Perera et al., 2006). In Pakistan, the State Bank of Pakistan (SBP) regulates all the banks and development financial institutions, under the Banking Companies Ordinance Act 1962. Few major modifications in banking laws were made during the year 1997.

The SBP supervises the entire banking industry in Pakistan. As per section 40 (A) of the Banking Companies Ordinance Act 1962, It is the responsibility of SBP to monitor the performance of every bank to ensure its conformity with the well-defined standards, rules and regulations. The SBP has the authority to take corrective steps in case of any non-compliance by the banking institutes.

According to Yearly Performance Review of the Banking System by SBP (December, 2013), the Pakistani banking industry consists of 47 banks, excluding non-banking finance companies (NBFCs) and development financial institutions (DFIs). Operationally, SBP has divided these banks into five categories namely:

- Public Sector Banks (5)
- Private Sector Banks (22)
- Foreign Banks (7)
- Specialized Banks (8)
- Micro Finance Banks (9)

2.2 Liquidity Risk

The risk that arises from a bank’s incapability and inefficiency to meet its compulsions and obligations when they get mature without incurring undesirable losses is called as ‘Liquidity Risk’ (Comptroller of the Currency, 2001). This risk can harm both bank’s incomes and the assets/capital. Therefore, it turns out to be the top priority of a bank’s administration to ensure the accessibility of adequate funds to meet upcoming demands of earners and borrowers, at sensible costs.

As per SBP:

Liquidity risk is the potential for loss to an organization, arising from either its incapability to encounter its responsibilities or to fund upsurges in assets as they drop due deprived of incurring unacceptable losses or cost.

In short, liquidity risk can be described as the risk of being unable to liquidate a position at a sensible price in the given time (Muranaga & Ohsawa, 2002). Two key elements of liquidity risk are quoted in this definition:

(a) Liquidating/ Settling the assets whenever required, and
(b) It should be at impartial market value.
Banks and Institutions face liquidity risk if they are not discharging their assets at a realistic price. The price enticing remains risky due to drained sales circumstances, while liquidating any of the institute’s assets immediately. This may result in a substantial drop in earnings. Extensive withdrawal of deposits may also generate a liquidity deception for Financial Institution (Jeanne & Svensson, 2007; Kumar, 2008), however, this may not be always the main source of liquidity risk (Holstrom & Tirole, 2000; Diamond & Rajan, 2005). There are numerous other aspects of creating gigantic liquidity complications for the banks. For instance, the widespread commitment and long-standing lending may severe liquidity issues (Kashyap et al., 2002). Furthermore, banks having a huge coverage in long-term advances may face difficulties in liquidating due to high liquidity pressure.

There are two basic aspects of liquidity risk (Goodhart, 2008), maturity renovation i.e., the bank’s assets and liabilities’ maturity; and essential liquidity of a bank’s asset that is the level of assets which can be sold out without experiencing a significant loss under any market situation. These elements of a bank’s liquidity are entangled. Banks do not required to be concerned about the maturity renovation if they have the assets that can be traded without bearing any loss.

Apart from the above-mentioned maturity disparity, liquidity risk also arises due to deteriorating economic circumstances; causing less reserve cohort and alarm the savers. This may show the disappointment of a bank, in fact the entire banking system due to Poisson effect (Diamond & Rajan, 2005).

Earlier, many scholars have been converging on liquidity risk originating from the balance sheet liability side of a bank. Concurrently, less consideration has been given to the possibilities arising from the asset side. Liquidity risk may rise due to the failure or delays in cash flows from the debtors or early end of the missions (Diamond & Rajan, 2005). A Spartan liquidity disaster may cause enormous drowning in form of insolvencies and bank runs (Goodhart, 2008), leading to a radical monetary crisis (Mishkin et al., 2006).

The SBP’s 3rd Quarterly Report for the FY 2010-2011 presents that the continued strong credit plea from public sector enterprises (PSEs) and sluggish step of retirement of unresolved commodity business loans, used additional burdens on the liquidity position of financial institutions of the country. Additionally, it turns out to be difficult for SBP to accomplish the liquidity in Pakistan’s banking organization due to escalation in loans to PSEs. Unnecessary borrowing from the Government of Pakistan (GoP) has also modeled a difficult trial for the banks (SBP, 2010).

2.3 Managing Liquidity Risk

Liquidity risk management is a vital component of the global risk management agenda of the financial services sector, regarding all financial institutions (Majid, 2003). Preferably, a well-managed financial institute should have a precise mechanism for the identification, monitoring, measurement and mitigation of liquidity risk (Comptroller of the Currency, 2001). The system helps the banks in timely acknowledgment of the bases of liquidity risk to elude losses. The balance sheets of banks are emergent in complication and reliance upon the capital markets has made the liquidity risk management more challenging. The banks having improved exposure in the capital markets must have a profound understanding of the risks. These banks
should improve the mechanism required for appropriate risk management and measurement (Guglielmo, 2008). The bank should have unceasing cognizance about the failure of its various funding sources in terms of ‘separate bands of clientele’ (individual patrons, traders, etc) and instruments and financial markets (Falconer, 2001).

A severe liquidity crisis may develop into a comprehensive capitalization disaster within a short period. This state may grow due to fire-sale risk affecting illiquid assets. This passion sale risk may also effect the balance sheet because the organizations are obliged to mark their assets to the fire-sale price. Banks can evade this crisis by focusing on the ratios like liquid liabilities to total liabilities and liquid assets to total assets (Goddard et al., 2009).

On other hand, a bank may recover the maturity renovation by holding extremely liquid assets as these assets can be pledged or sold to encounter the funding risks in a small time (Goodhart, 2008). A bank may have to upsurge its cash reserves to alleviate the liquidity risk, but it may be costly in exercise (Holmstrom & Tirole, 2000). The liquidity of an asset must be built on its volume to generate the liquidity, in place of its trading book arrangement or its accounting action (CEBS, 2008). CEBS, 2008; additional highlights to uphold a liquidity barrier, encompassing of liquid assets and cash. This barrier cushions the liquidity stress in a “persistence period”.

Furthermore, the SBP imposes the regulation to maintain cash reserve requirement (a least quantity that a bank is compulsory to maintain at all eras of its operations) to overawed the liquidity glitches. A bank always efforts to avoid the capital dose from the government since this may place a given bank at the government’s compassion (Jeanne & Svensson, 2007). Therefore, banks grip minimum cash amount to avoid liquidity hitches (Jenkinson, 2008).

The deposits deliver a natural hedgerow to banks against the liquidity risk. Under the worried market situations, the banks are supposed as a harbor for investors who do not mean to issue funds against their loan promises (Gatev & Strahan, 2003). The cash movements in any bank accompaniment each other. The invasions of funds give a natural hedgerow to banks for discharges due to loan advancements. So, banks use deposits to hedgerow the liquidity risk. This quarrel also finds provision from the work of Kashyap et al. (2002) who delivered a basis of risk management to describe the features of a commercial bank, usually branded as “financial intermediary” joining demand deposits with loan promises.

One conceivable security measure to decrease liquidity pressure is the change of illiquid assets into cash. In times of enormous funding burden, securitization methods are usually employed by the banking system for liquidation of assets like hypothecations (Jenkinson, 2008). A bank should resort to funding deficit by acting on the assets side of the balance sheet if it is confronting limitations on rising liquidity. It will be forced to crush the progression of loans to its clients to decrease funding supplies.

In spite of its structures to support funding and upsurge liquidity, Ali (2004) has explained two main disadvantages of the above-stated policy. Frist, it takes time to be matured. Many of the advancing decisions are taken in advance and hard to be upturned promptly, thus not making liquidity drainage rapidly. Second, condensed lending covers a large part of the economy. In the non-availability of capitals to households and companies, it becomes problematic to attention consumption and long-term investment in the economy.
2.4 Liquidity Risk and Performance of Banks

Liquidity glitches may disturb a bank’s earnings and capital and in extreme conditions may result in the failure of an otherwise solvent bank (Central Bank of Barbados, 2008). Banks may have to borrow from the market even at an extraordinarily high rate during a liquidity crunch. This eventually causes a weakening in the bank’s earnings. Additionally, a bank’s more borrowing to meet savers’ demand may place the bank’s capital at risk. So, debt to equity ratio will increase, affecting the bank’s effort to preserve an optimum capital arrangement.

Liquidity risk leads to prompt sale of the assets of the bank which may damage bank’s capital base (Diamond & Rajan, 2001; Falconer, 2001). If any of the banks encounters a situation in which it has to trade a large number of its illiquid assets to meet the backing wants (to decrease the leverage in conformism with the prerequisite of capital adequacy), the fire-sale risk may rise. This situation may call for price reduction to attract consumers which may have a hit on effect on the balance sheets of other organizations as they will also be indebted to mark their assets to the fire-sale price (Goddard et al., 2009).

A bank may reject the advancing, even to a prospective financier, if it feels that the liquidity need of the bank is moderately high (Diamond & Rajan, 2001). It is an opportunity loss for the bank. If a bank is powerless to meet the supplies of demand deposits, it shows bank run (Diamond & Rajan, 2005). No bank advances all of its assets in the long-term schemes. Many of the funding resources are financed in the short period liquid assets. This provides a barrier against the liquidity jolts (Holmstrom & Tirole, 2000). A disparity in depositors demand and invention of resources sails a bank to make the resources at a higher price (Diamond & Rajan, 2005).

Liquidity has a grander influence on the tradable portfolios and securities. Generally, it denotes to the loss developing from liquidating a given situation (Zheng & Shen, 2008). It is vital for a bank to be alert of its liquidity station from a marketing viewpoint. It helps to grow its client loans in case of attractive market chances (Falconer, 2001). A bank with liquidity glitches loses a number of business opportunities. This places the bank at a modest disadvantage, as a divergence to those of the competitors.

3. Conceptual Framework

Liquidity risk has drawn substantial attention of investigators and risk specialists alike in recent times. Liquidity risk may have a devastating impact on a bank that may also affect the profitability (Diamond & Rajan, 2005). This risk stems from the explanation of banking operations (Chaplin et al., 2000). It can affect the overall earnings/profit and capital/reserve of the bank adversely. The regulatory authorities and banks now pay more attention to the liquidity of the financial institutions.

Most of the banking operations rely on deposits and if savers start drawing their deposits from the bank, it may generate a liquidity trap for the bank (Jeanne & Svensson, 2007; Kumar, 2008.). This would force the bank to borrow money from the central bank or the inter-bank
market at higher prices (Diamond & Rajan, 2001). On the other hand, a bank having sufficient deposits in its accounts would not face this crisis but may lose profitability if the liquidity gap widens.

3.1 Research Hypotheses

1. **H1**: There is a significant positive relationship between Deposits and Earning of the banks.
2. **H2**: There is a significant negative relationship between cash reserve and earning of the banks.
3. **H3**: There is a significant negative relationship between liquidity gap and earning of the banks.
4. **H4**: There is a significant negative relationship between NPLs and earning of the banks

**H1**: There is a significant positive relationship between deposits and earning of the banks. (The earning of the bank boosts up due to increase in deposits)

Banks sustain on deposits. There is a direct relationship between deposit and profit of the banks. It is the main pillar of the industry to sustain for growth. If the savers start drawing their deposits from the bank, it would generate a liquidity trap for the bank (Jeanne & Svensson, 2007; Kumar, 2008.).
H2: There is a significant negative relationship between cash reserve and earning of the banks. (The earnings of the bank decreases due to increase in cash reserves)

Every bank attempts to keep adequate funds to meet the unforeseen demands from savers (Majid, 2003) but preserving the cash is extremely costly (Holmstrom & Tirole, 2000). If banks preserve huge cash reserves it may not only drop a number of opportunities in the marketplace but the bank would also have to bear the great cost related with cash.

H3: There is a significant negative relationship between liquidity gap and earning of the banks. (The earnings of the bank decreases due to increase in the liquidity gap)

One of the major causes of liquidity risk is the maturity gap between assets and liabilities. In the banking industry, the mainstream of the assets are subsidized with deposits; most of which are current with a possibility to be withdrawn at any time. This condition is known as the incompatibility (Gap) between assets and liabilities (Central Bank of Barbados, 2008; Brunnermeier and Yogo, 2009). This disparity can be calculated with the help of the maturity gap between assets and liabilities (Falconer, 2001; Plochan, 2007). More liquidity gap would generate liquidity risk (Plochan, 2007; Goodhart, 2008; Goddard et al., 2009).

H4: There is a significant negative relationship between NPLs and earning of the banks. (The earnings of the bank reduces due to high provisioning for NPLs)

Many banks focus on the wholesale or corporate lending, which is considered a challenge for the organization to preserve the required liquidity station (Akhtar, 2007). This lending is generally long-term, which may generate liquidity glitches for a bank (Kashyap et al., 2002). The loan maturity process reduces down in the banks during periods of deprived production of resources in the economy. This condition gives rise to NPLs. Whenever NPLs face a quick increase, liquidity crunch becomes foreseeable.

4. Research Methodology

The data for study and analysis have been taken from the annual financial reports of Pakistani banks. This research only focuses on conventional banks because Islamic banks have a different and diverse risk management structure. The data have been collected for a set of 15 banks for the period 2006-2011. The obtainability of data verbalized the choice of 15 banks that explanation for the majority of the total assets of the Pakistani banking industry. The nature of data is panel data as it is a combination of time series and cross sectional data. Because of the small extent of the sample period (2006-2011) and a small value of degrees of freedom, the cross section (15 banks) and time series (2006-2011) data is transformed into panel data yielding 132 observations thus overcoming the degrees of freedom problems.

4.1 Sample Characteristics

The banking industry in Pakistan is divided into five categories:

- Public Sector Banks (5)
- Private Sector Banks (22)
A sample of 15 public and private sector banks is taken to measure and evaluate the effect of liquidity risk on the performance of banks. The income statement, balance sheets and their notes have been considered to acquire the data for the variables stated in the developed model. All values which are taken for nominated variables are in Pakistani rupees. The explanation of these variables is as follows:

**Deposits**: Deposits are accounts of the customers of banks. The data for deposits are taken from the liability side of balance sheets without any classification of current or other types of deposit accounts.

**Cash**: Data for the cash are taken from the assets side of balance sheets of banks. This includes “cash and balance with the treasury bank” only. “Accounts with other banks” have not been incorporated in cash.

**Liquidity gap**: The data for liquidity gap are obtained from the table of maturity of assets and liabilities. The liquidity gap for one month has been taken as a negative gap in one month may create difficulties for the bank to meet the rising demands of depositors.

**NPLs**: NPLs affect the performance of a bank adversely. The provisioning for NPLs is taken from “profit and loss statement” of banks for the analysis in this study.

**Profitability**: Profitability is taken from the “profit and loss statement” of banks. This profit is calculated before tax as banks have different tax shields.

### 5. Data Analysis and Findings

The Researchers applied Multiple Regressions to test the model. Descriptive Statistics were obtained before testing the model to check the normality of the data. The ADF test was also executed to satisfy the requirements of regression.

The mean value of “Profitability” is significantly positive (table 1, presenting that the overall Pakistani Banking Industry is enjoying a strong profitability). However the mean value of the “Liquidity Gap” is significantly negative. Likewise, the normality of the data is within satisfactory pillar i.e. acceptable ranges as skewness is not high, sufficient to affect the normality of the data. The value of kurtosis for all the variables is also positive. Furthermore, the Jarque-Bera’s probability <0.001.
Table 1
Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>Profitability</th>
<th>Deposits</th>
<th>Cash</th>
<th>Liquidity Gap</th>
<th>NPLs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>871,084.4</td>
<td>40,800,673</td>
<td>4,475,018</td>
<td>-13,252,289</td>
<td>694,816.1</td>
</tr>
<tr>
<td>Median</td>
<td>96,628</td>
<td>17,869,041</td>
<td>1,063,997</td>
<td>-2,577,406</td>
<td>327,010.5</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>3,657,491</td>
<td>77,215,637</td>
<td>9,718,279</td>
<td>41,969,552</td>
<td>1,891,704</td>
</tr>
<tr>
<td>Skewness</td>
<td>2.044989</td>
<td>3.422080</td>
<td>3.884701</td>
<td>-2.440361</td>
<td>0.443655</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>10.88064</td>
<td>16.97099</td>
<td>23.64498</td>
<td>11.59320</td>
<td>10.37512</td>
</tr>
<tr>
<td>Jarque- Bera</td>
<td>348.1764</td>
<td>1,068.860</td>
<td>2,149.057</td>
<td>431.3515</td>
<td>243.7106</td>
</tr>
<tr>
<td>Probability</td>
<td>0.000000</td>
<td>0.000000</td>
<td>0.000000</td>
<td>0.000000</td>
<td>0.000000</td>
</tr>
</tbody>
</table>

5.1 Correlation Matrix

The correlation matrix shows that profitability is positively correlated with cash and deposits, whereas it is negatively correlated with liquidity gap and NPLs. The correlation matrix is refuting the existence of Multi-co linearity between the independent variables as all the correlations are less than 0.90.

Table 2
Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>Profitability</th>
<th>Deposits</th>
<th>Cash</th>
<th>Liquidity Gap</th>
<th>NPLs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profitability</td>
<td>1.000000</td>
<td>0.693824</td>
<td>0.679218</td>
<td>-0.447647</td>
<td>-0.237092</td>
</tr>
<tr>
<td>Deposits</td>
<td>0.693824</td>
<td>1.000000</td>
<td>0.836243</td>
<td>-0.526233</td>
<td>0.289558</td>
</tr>
<tr>
<td>Cash</td>
<td>0.679218</td>
<td>0.836243</td>
<td>1.000000</td>
<td>-0.544237</td>
<td>0.257240</td>
</tr>
<tr>
<td>Liquidity Gap</td>
<td>-0.447647</td>
<td>-0.526233</td>
<td>-0.544237</td>
<td>1.000000</td>
<td>-0.201215</td>
</tr>
<tr>
<td>NPLs</td>
<td>-0.237092</td>
<td>0.289558</td>
<td>0.257240</td>
<td>-0.201215</td>
<td>1.000000</td>
</tr>
</tbody>
</table>

5.2 Multiple Regressions

Table 3 indicates the outcomes of multiple regressions. The value of $R^2$ is 0.719, enlightening 71.9 percent variability in profitability measured for by the proposed model. The adjusted $R^2$ is an enhanced estimation of $R^2$ in the population. 0.707 is the value of adjusted $R^2$. This adjusted value delivers a revised estimate, i.e. 70.7 percent of the variability in Bank’s Profitability due to the fitted model.

The table also shows the value of F-test for the “Null Hypothesis”. It provides that accounted factors of liquidity risk not is related to the profitability of the banking industry. In other verses, $R^2$ is zero. So from calculated result, the null hypothesis is rejected ($F= 60.8188$, $P <0.05$). Henceforth, it is established that at least one of the factors of liquidity risk is associated with the Bank’s Profitability. As we have seen that $P <0.05$, so the model fitness is authenticated here and showing a durable relationship between factors of liquidity risk and the Bank’s Profitability.
The above-mentioned table also shows value of the standard errors of the estimates, the estimates of the regression coefficients, p-values and t-statistics. The coefficient column provides estimated regression coefficients. It can be projected that there would be 2.5 percent positive variation in the profitability of the banking industry as a result of a unit change in deposits. 4.560875 is the t-statistic for this coefficient i.e. it is significant. The p-value for this coefficient < 0.001, hence, \( H_1 \) is accepted here with a 99.99% confidence level. It shows that as the bank’s deposits grow, it will support the banks to rise their profitability (Diamond and Rajan, 2001; Jeanne and Svensson, 2007; Kumar, 2008).

\[ H_1: \text{There is a significant positive relationship between Deposits and Earning of the Banks. (The Earning of the bank boosts up due to increase in deposits) (Accepted).} \]

The bank’s profitability is improved by 9.66% with a unit increase in cash and vice versa. There is a positive association between Bank’s Profitability and cash. 2.158 is the t-value of this coefficient i.e. it is significant and \( p < 0.05 \). The \( H_2 \) is not accepted here, so rejected as the coefficient is presenting a positive association with Bank’s profitability. These outcomes are in conflict i.e. mismatched with Holmstrom and Tirole (2000).

\[ H_2: \text{There is a significant negative relationship between Cash Reserve and Earning of the Banks. (The Earnings of the Bank decreases due to increase in cash reserves) (Rejected)} \]

From the above table, -0.0104 is the beta coefficient of liquidity gap. It indicates that there will be a 1.04 per cent negative change in the profitability of the banking system due to a degree change in the liquidity gap. -1.833 and 0.0699 are the values of t-statistics and p value, respectively, which are insignificant. The liquidity gap displays the maturity gap between assets and liabilities, so higher liquidity gap will disturb and affect the performance of the banking industry negatively (Plochan, 2007; Goodhart, 2008; Goddard et al., 2009). Hence, \( H_3 \) is partly accepted with a 93.01% confidence level.

### Table 3
**Multiple Regressions**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-85642.97</td>
<td>236164.3</td>
<td>-0.362642</td>
<td>0.7177</td>
</tr>
<tr>
<td>Deposits</td>
<td>0.025693</td>
<td>0.005633</td>
<td>4.560875</td>
<td>0.0000</td>
</tr>
<tr>
<td>Cash</td>
<td>0.096666</td>
<td>0.044943</td>
<td>2.150878</td>
<td>0.0340</td>
</tr>
<tr>
<td>Liquidity Gap</td>
<td>-0.010404</td>
<td>0.005675</td>
<td>-1.833251</td>
<td>0.0699</td>
</tr>
<tr>
<td>NPLs</td>
<td>-0.935856</td>
<td>0.109773</td>
<td>-8.525401</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

\[ R^2 \] 0.719164 \( \quad \text{Mean Dependent Variable} \quad 938638.4 \]

\[ \text{Adjusted R}^2 \] 0.707339 \( \quad \text{S.D. Dependent Variable} \quad 3752604. \]

\[ \text{S.E. of Regression} \] 2030089. \( \quad \text{F-Statistic} \quad 60.81882 \]

\[ \text{Durbin- Watson Stat} \] 2.062727 \( \quad \text{Prob. ( F-Statistic)} \quad 0.000000 \]

\( \ast \text{Dependent Variable : Profitability} \)
H3: There is a significant negative relationship between Liquidity Gap and Earning of the Banks. (The Earnings of the Bank decreases due to increase in the liquidity gap) (Partially Accepted).

The coefficient of NPLs is -0.9358 which means 93.58% negative deviation in profitability is due to one degree change in NPLs and -8.5254 is the t-statistics for the NPLs i.e. it is highly significant and $p < 0.001$. The increase (higher amount) in NPLs causes a reduction in Bank’s Profitability (Kashyap et al., 2002). These outcomes lead to the acceptance of H4.

H4: There is a significant negative relationship between NPLs and Earning of the Banks. (The Earnings of the Bank reduces due to high provisioning for NPLs) (Accepted).

6. Results

The results of this research expose a significant effect of all the factors of liquidity risk on the performance of banking industry. An escalation in deposits supports the banks to raise their profitability. Banks should not be dependent on the repo market or central bank to meet the demands of other depositors. Additionally, the bank may use this depositor’s funds in a creative and productive way.

The bank’s profitability is adversely affected due to increase in NPLS and liquidity gap. With a substantial liquidity gap, the banks may have to borrow from the SBP or repo market even at a higher rate thus pushing up the cost of banks. This rise in the cost eventually affects the bank’s profitability. Though, the outcomes of this research show that Pakistani banks are not
depend on the repo market. They have sufficient cash decreasing their dependence on repo market. This comforts the banks to keep the adverse impact of the liquidity gap within an acceptable range. It can be concluded that the destructive effects of liquidity can be evaded by maintaining enough cash reserves.

High provisioning of NPLs also decreases the bank’s profitability. The extraordinary of provisioning of loans adversely affects the bank’s profitability. Therefore, banks should from time to time monitor their long-term borrowers. NPLs display the existence of credit risk, which can quickly turn into liquidity crisis.

7. Conclusion

Liquidity problems may negatively and badly upset a given bank’s capital and earnings. Under extreme conditions, it may cause the failure/collapse of an otherwise solvent bank. A bank having liquidity glitches may face difficulties in meeting the demands of depositors. Though, this liquidity risk may be diminished by raising deposit base, maintaining sufficient cash reserves, decreasing the NPLs and liquidity gap. Sufficient cash reserves reduce the bank’s dependence on the repo market. This decreases the cost related with over the night borrowing. Furthermore, it also supports the banks to avoid fire sale risk.

It is vital for the bank’s management to be alert of its liquidity position in dissimilar buckets. This may help them in improving their investment portfolio and giving a competitive advantage in the market. It is the highest priority of a bank’s management to pay the essential attention to the liquidity issues. These difficulties should be punctually addressed, and instant remedial measures should be taken to evade the consequences of illiquidity.

8. Recommendations

The following recommendations can be made on the basis of unstructured interviews with the CROs of different banks.

- Few banks attempt to carry more cash in their reserves to meet the liquidity risk that affects the performance of bank as cash is always expensive. Banks should try to keep up more liquid assets other than cash.
- Banks should not take very large exposure in the long-term assets.
- Banks should continuously monitor the economic indicators to forecast the demands of depositors.
- Special attention should be given to avoid the maturity mismatch between assets and liabilities.
- Liquidity situation should be periodically monitored by the management of a bank.
References


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